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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,294	06/19/2001	Lonnie O'Neal Ingram	BCI-026	2663
7590 02/17/2004				
PETER C. LAURO EDWARDS & ANGELL, LLP 101 FEDERAL STREET BOSTON, MA 02110			EXAMINER MARX, IRENE	
			ART UNIT 1651	PAPER NUMBER

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/885,294	Applicant(s) INGRAM ET AL.	
	Examiner Irene Marx	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-11,18,19,21-33 and 36-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-11,18,19,21-33 and 36-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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The amendment filed 1/12/04 is acknowledged. Claims 1, 3, 4, 6-11, 18-19, 21-33 and 36-42 are being considered on the merits.

The rejection under 35 U.S.C 112, first paragraph regarding deposit is withdrawn in view of applicant's averments.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is vague and indefinite in that the nature of the "control" is not specified. It is recommended that the claim be amended to specify that the control is cultured under the same conditions in the absence of the compound the experimental cells are exposed to..

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 10, 11, 18, 19, 21, 22, 23, 25, 27, 30, 31, 32, 38, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Stanley *et al* (1993).

The claims are directed a method for increasing production of alcohol from a process of producing alcohol with a cell by contacting a saccharide source with a cell and exposing the cell to various compounds, including acetaldehyde.

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Stanley *et al.* (1993) disclose a process for producing alcohol with a cell by contacting a medium containing glucose with ethanologenic cells of *Saccharomyces* and contacting the cell with acetaldehyde. See, e.g., Figure 1. The production of alcohol is increased inherently as evidenced by reduced inhibition due to ethanol as evidenced by an increase in growth.

The medium contains yeast extract, which comprises the amino acid glutamate.

Claims 1, 3, 4, 10, 11, 18, 19, 21, 22, 23, 25, 27, 30, 31, 32, 38, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Stanley *et al.* (1997).

The claims are directed a method for increasing production of alcohol from a process of producing alcohol with a cell by contacting a saccharide source with a cell and exposing the cell to various compounds, including acetaldehyde.

Stanley *et al.* (1997) disclose a process for producing alcohol with a cell by contacting a medium containing glucose with ethanologenic cells of *Saccharomyces* and contacting the cell with acetaldehyde. See, e.g., Figures 1 and 2. The production of alcohol is increased inherently as evidenced by reduced inhibition due to ethanol as evidenced by an increase in growth.

The medium contains yeast extract, which comprises the amino acid glutamate.

Claims 1, 3, 4, 6-11, 18-19, 21-33 and 36-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanley *et al.* (1997) or Stanley *et al.* (1993) taken with Ingram *et al.* (U.S. Patent No. 6,107,093).

Each of the Stanley *et al.* references discloses a process for producing alcohol with a cell by contacting a medium containing glucose with ethanologenic cells of *Saccharomyces* and contacting the cell with acetaldehyde. See, e.g., Figures 1 and 2; respectively Figure 1. The production of alcohol is increased, since there is reduced inhibition due to ethanol as evidenced by an increase in growth.

The medium contains yeast extract, which comprises the amino acid glutamate.

The references differ from the claimed invention in the use of other ethanologenic cells, such as the recombinant *E. coli* and *Klebsiella* strains listed in claim 9. However, Ingram *et al.* adequately demonstrates that these microorganisms are old and well known in the art (See, e.g., Tables 2 and 6.). Note also the use of Luria broth in Example 8

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Given that acetaldehyde is a precursor of ethanol production, one of ordinary skill in the art would have had a reasonable expectation of success in improving ethanol production by exposing the alcohologenic cells to other intermediates in the metabolic pathways leading to ethanol, such as pyruvic acid, succinic acid and α -ketoglutarate, particularly in microorganisms wherein metabolic pathways have been altered to divert products of glycolysis to the production of ethanol (See, e.g., Ingram col. 3, lines 42 et seq.).

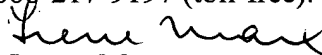
Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the process of Stanley *et al.* (1997) or Stanley *et al.* (1993) by exposing alcohologenic cells to other intermediates in the metabolic pathways of an alcohol such as ethanol, including intermediates of the tricarboxylic cycle, such as pyruvic acid, succinic acid and α -ketoglutarate rather than the precursor acetaldehyde, particularly in alcohologenic cells wherein the metabolic pathways for the production of the alcohol ethanol have been altered, as suggested by the teachings of Ingram *et al.* (U.S. Patent No. 6,107,093) for the expected benefit of providing an increased production of economically useful alcohol by the alcohologenic cells.

Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is (571) 272-0919. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Irene Marx
Primary Examiner
Art Unit 1651